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REPORT OF INSECT SURVEYS ON PORTIONS OF THE ROGUE RIVER NATIONAL FOREST AND ADJACENT PRIVATE LANDS

WESTERN KLAMATH SUBREGION

1937 - 1940

By

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Forest Insect Investigations

December 1940

Forest Insect Laboratory
445 U. S. Court House
Portland, Oregon

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WESTERN KLAMATH SUBREGION
1937 - 1940

Conducted through Cooperation
of
Forest Service
and
Bureau of Entomology and Plant Quarantine

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Introduction

Since 1921, annual pine beetle surveys have been made on the ponderosa pine timber lands lying partly within but mainly south of the Rogue River National Forest on the Pokegama plateau. This area was designated as Area 1 of the Southern Oregon- Northern California Pine Beetle Control project during the years between 1921 and 1924 when that project was under way and more recently has been designated the Keno Area.

Since 1931, general estimates of beetle damage have been made covering the rest of the Rogue River National Forest lying east of the Cascade Summit, and this division of the forest together with the adjacent and intermingled private and other federal lands forms the western portion of the Klamath Subregion. While a long series of reports on beetle conditions of the Keno Area has been prepared annually since 1921, the present report is the first summary of beetle conditions taking in all of this western Klamath Subregion. It covers the period from 1937 up to the present time.

Description of the Forest

This western Klamath Subregion takes in about 423,000 acres of ponderosa pine land carrying an estimated stand of 2,572,000 Mbm as of January 1939.

In order to estimate accurately the pine beetle losses and show the differences in beetle infestations exhibited by areas of different growing conditions this portion of the Klamath Subregion has been divided into several entomological areas and units. A short description of each area follows.

Beaver Marsh Area. The area consists of about 42,000 acres the greater part of which has been cut over. Bounded on the west by the Cascade range and on the east by lodgepole pine flats, this area represents a low beetle risk, and since surveys were started, has never experienced any serious epidemics. The ponderosa pine is usually found on sites IV to III in pure and mixed stands. The favorable moisture conditions on better than average sites and the altitude of 5000 feet with low temperature conditions are probably responsible for the mild beetle activity found in the area.

Fort Klamath Area. This area includes 71,000 acres of ponderosa pine land bordering Wood River Valley and extending partly up the Cascade Range on the west and to the crest of Sand Creek Mountain on the northeast. This is not a high hazard area but is of a slightly higher risk than the Beaver Marsh Area, probably due to the lower elevation and the accompanying milder temperatures.

Keno Area. This area is quite extensive and includes some 310,000 acres of pine land, but the greater part of this has been cut over in the last decade. Beetle depletion and logging have combined to leave a stand of timber representing only a small portion of the original stand. The ponderosa pine is found mostly in mixture and occurs on Sites II, III, and IV representing some of the finest timber found in the State. This area is located south of the Fort Klamath Area, bordering Klamath Lake on the east and extending westward to include the extent of the ponderosa pine found on the east side of the Cascade Range from Buck Mountain south to the California line.

Description of the Survey

The annual surveys are readily divided into intensive and extensive methods. The extensive method consists of ocular estimates of beetle damage on large areas, while the intensive survey consists of a 100 percent determination of the losses found on sample plots.

Six check plots are now distributed throughout these three areas. The four plots in the Beaver Marsh and Fort Klamath Area are half section plots and the remaining two plots in the Keno Area are each a full section. Upon establishment of each plot it is cruised and the volume and stand structure by Keen's Tree Classes are obtained, and subsequent annual spotting of the insect losses is performed by three man crews. The crews also gather from the plots experimental data which are useful in the research work carried on by the Forest Insect Laboratory.

The extensive survey is carried out by the crew supervisor who makes ocular estimates of insect losses on the forest from such vantage points as afforded by trails, roads, and lookout points. The loss as recorded on the check plots is used as a basis for estimating the more general loss on the areas as a whole.

Table No. 1 gives the location and description of the check plots distributed on these areas. These plots represent approximately 1.6 percent of the total stand.

Survey Personnel

The annual surveys have been carried out in close cooperation with the Klamath Forest Protective Association and the Forest Service in which the Forest Service contributed S and E funds to defray salary expenses. In all cases the Bureau has furnished the supervision for the field crews. In 1937, a crew of student assistants, consisting of R. F. Goodall (leader), Alfred G. Crum, and Donald M. Fishback completed the assignment on the Keno Area, while another crew composed of R. F. Goodall (leader), Ralph Brinck, Jack M. Coskey, Martin W. Robertson, and Edwin M. Santee cruised the plots on the Beaver Marsh and Fort Klamath Areas. The 1938 survey was completed by a crew consisting of Ashley A. Foust (leader), George F. Foley, and Kendall B. Wood. In 1939, the Beaver Marsh and Fort Klamath Area check plots were cruised by a crew consisting of R. C. Grant (leader), J. P. Rhody, and P. A. Layman. The Keno Area assignment was completed by S. B. Gross (leader), Robert G. Ruegg, and Jean A. Houston. Between August 12th and August 22nd the 1940 assignment was completed by a Bureau of Entomology and Plant Quarantine crew consisting of Everett B. Wycoff (leader), Donald P. Comstock, and J. E. Manning. F. P. Keen has supervised the field crews for the past several years and has made the general loss estimates for the Forest.

Pine Beetle Losses

The National Forest lands of the Rogue River National Forest lying east of the Cascades have not suffered the severe pine beetle losses found on many of the pine stands of eastern Oregon. Records for some portions of the Forest do not precede 1937 but we know that certain stands in the Keno and Fort Klamath Areas have experienced beetle epidemics over a long period of years. Actual plot records show severe epidemics occurring in 1925-1926, 1931-1932, and 1934 on the Keno Area, while changes in stand structure and the presence of snag patches conclusively show a history of past epidemics on portions of the Fort Klamath Area. Since 1937, which was apparently a low year, insect activity has steadily increased. The percent of stand killed on the check plots for 1939 is .55 percent and represents a 40 percent increase over 1938. This 40 percent increase in loss was shown by both trees and volume of timber killed.

Table No. 2 shows the pine beetle damage which has occurred on the sample plots during the period 1937 to 1939.

The current survey was made during a period when an average of only 39 percent of the 1940 loss was possible of detection. At this time only a rough prediction can be made of the 1940 depletion, and more accurate figures cannot be compiled until the completion of the 1941 survey. The predicted percent of stand killed in 1940 is 1.17 which represents an increase of 111 percent over 1939. If the 1938 and 1939 trend continues at the same rate the 1940 loss should approximate a 75 percent increase.

The estimated gross loss for this western Klamath Subregion for 1939 is 11 million board feet or .43 percent of the total stand. The mean section loss was estimated to be 26 trees which averaged about 26 board feet per acre. Table No. 5 lists the estimated gross loss by Areas and Units.

The western pine beetle (Dendroctonus brevicomis Lec.) accounts for 80 to 90 percent of the insect-caused ponderosa pine mortality. The mountain pine beetle (Dendroctonus monticolae Hopk.) destroys some sugar pine and is occasionally destructive in ponderosa and lodgepole pine. In 1934, a serious outbreak of the mountain pine beetle occurred on 9000 acres of lodgepole pine in the Sun Pass area and was controlled by the solar heat method in a project conducted by the U. S. Forest Service.

No control work has been undertaken in the last few years on the Forest. The Klamath Forest Protective Association has carried out treating work on the Keno Area for several years and the last project, which was undertaken in 1938, has been discussed in F. P. Keen's report of 1938[1].

Conclusions

Bark beetle activity in ponderosa pine forests of the western Klamath Subregion has steadily increased from 1937 up to the present, but continues to be of a quiescent nature.

The estimated gross depletion for 1939 is 11 million board feet of ponderosa pine. Bark beetle loss on the check plots amounts to .55 percent of the stand volume, while the estimated gross loss on this portion of the subregion amounts to .43 percent of the stand volume.

---

[1] Report of Pine Beetle Surveys of the Keno Area, Klamath Working Circle, September 1938.

The annual loss for 1940 is predicted to be 75 percent greater than for 1939. Although a prediction based on partial cruises is not highly accurate, the indicated upward trend is of sufficient importance in itself to warrant the carrying out of intensive and extensive surveys for 1941.

Table No. 1

Description of Check Plots
Western Klamath Subregion

Area and Unit	Plot Name	Location T.S.	R.E.	Sec.	Elevation	Type	Site	Timbered Acres	Pine Volume January 1, 1938	Board Feet per Acre
KENO										
Johnson Prairie	Johnson Prairie	39	5	7	4,200	20.5	III+	630	9,078,682	14,400
Jenny Creek	Jenny Creek	40	4	34	3,450	20A	IV+	620	4,106,280	6,620
BEAVER MARSH										
Timber Crater	Crater Lake	29	6½	21E½	5,500	20.5	IV+	320	8,475,050	26,500
Scott Creek	Scott Creek	31	7½	13S½	5,400	20.5	IV+	320	5,641,995	17,600
FORT KLAMATH										
Seven Mile	Day Camp	32	6	26S½	4,300	20.5	III+	320	7,465,590	23,300
Crystal	Cherry Creek	34	6	22N½	4,600	20.5	IV+	320	4,803,330	15,000

Table No. 2

Pine Beetle Damage on the Check Plots

Western Klamath Subregion

Plot	Acres Timbered	Pine Volume MBM	Beetle Losses					Remarks
			Year of Attack	Trees Killed	Volume Killed	Bd. Ft. per Acre	Percent Stand	
Crater Lake	320	8,485	1937	8	10,350	32	.12	Plot is level, uniformly timbered.
		8,475	1938	21	27,560	86	.32	Little past loss.
		8,447	1939	13	14,900	47	.18	
Scott Creek	320	5,667	1937	23	25,470	80	.45	Rolling terrain.
		5,642	1938	17	13,150	41	.23	Some mixture of Shasta red fir.
		5,629	1939	22	32,960	103	.59	
Dry Camp	320	7,490	1937	15	24,290	76	.32	Plot is level, uniformly timbered.
		7,466	1938	25	31,730	99	.42	Cold pocket.
		7,434	1939	23	38,770	121	.52	
Cherry Creek	320	4,814	1937	11	10,440	33	.22	Steep topography.
		4,803	1938	17	20,740	65	.43	Very brushy in openings left by
		4,732	1939	31	37,120	116	.78	past losses.
Johnson Prairie	630	10,126	1937	49	57,030	91	.56	Treated. Level topography. Pine
		9,079	1938	23	58,555	93	.65	mixture.
		9,028	1939	42	74,090	118	1.79	
Jenny Creek	620	4,133	1937	45	26,430	43	.64	Treated. Level terrain.
		4,106	1938	25	11,080	18	.27	Pine mixture.
		4,065	1939	50	29,840	48	.73	

Table No. 3

Number of Trees Spotted on Check Plots

Western Klamath Subregion

Plot	1937 Loss	1938 Loss	1939 Loss	1940 Loss Date of Cruise	Trees Spotted	Estimated Total Loss	(New)	Ratio to 1939
Crater Lake	[illegible]	21	[illegible]	8-12-40	9	[illegible]	23	2.00
Scott Creek	[illegible]	17	[illegible]	8-13-40	13	[illegible]	33	1.63
Dry Camp	[illegible]	25	[illegible]	8-14-40	16	[illegible]	41	1.91
Cherry Creek	[illegible]	17	[illegible]	8-15-40	20	[illegible]	50	1.74
Johnson Prairie	[illegible]	23	[illegible]	8-19-40	31	[illegible]	74	1.83
Jenny Creek	45	25	50	8-21-40	44	105	102	2.10
Total	[illegible]	[illegible]	[illegible]		133	[illegible]	323	1.89
Ratio to Previous Year		.85	1.41			1.09	1.78	

Table No. 4

Plot Losses and Trends

Western Klamath Subregion

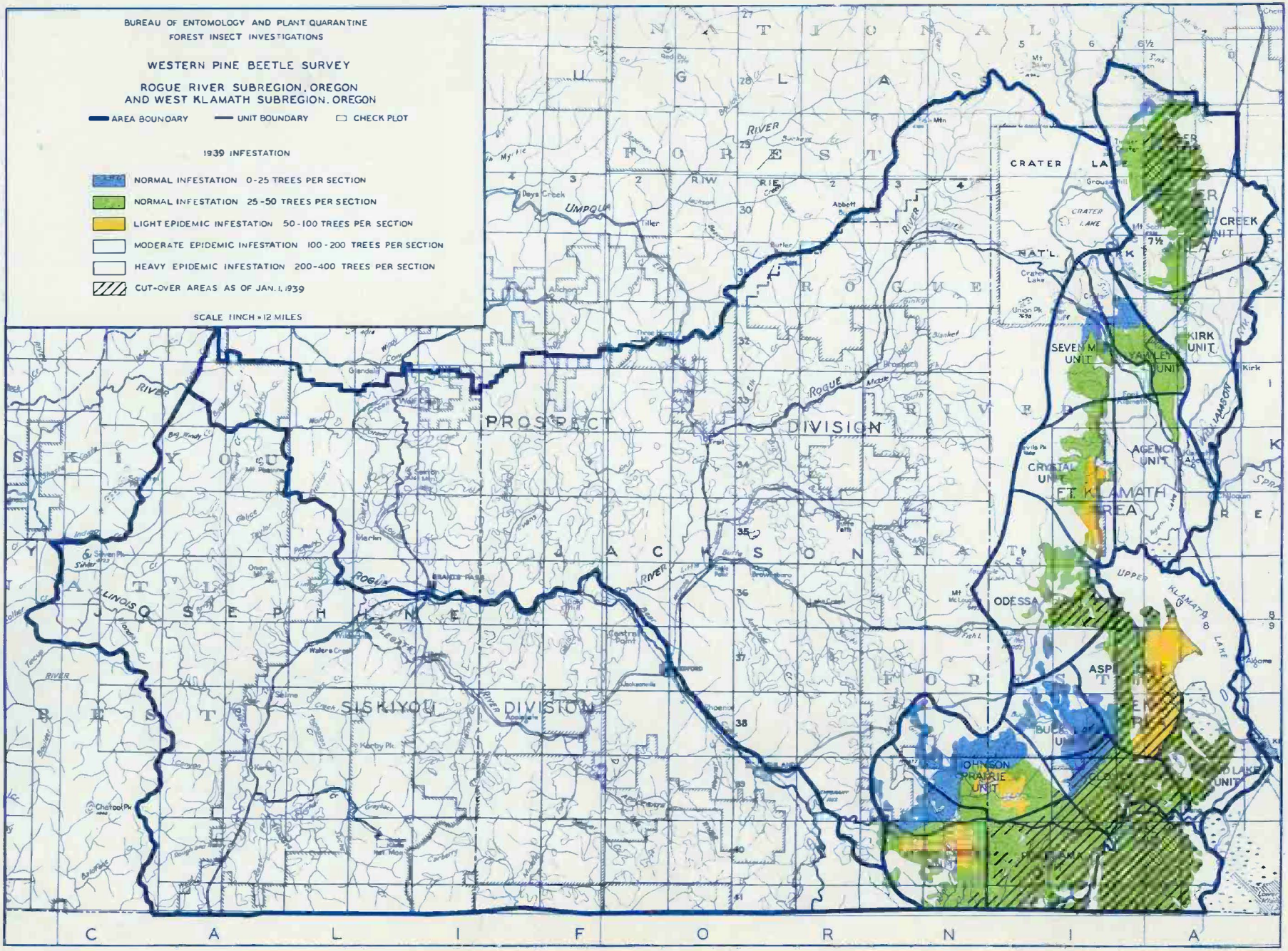
Area and Plot	1938 Volume in Board Feet	1938 Bd.Ft. per Acre	1938 Percent of Stand	1938 Ratio to 1937	1939 Volume in Board Feet	1939 Bd.Ft. per Acre	1939 Percent of Stand	1939 Ratio to 1938	1940 (Predicted) Volume in Bd. Ft.	1940 (Predicted) Bd.Ft. per Acre	1940 (Predicted) Percent of Stand	1940 (Predicted) Ratio to 1939
BEAVER MARSH												
Crater Lake	27,560	86	.33	2.66	14,900	47	.18	.54	39,600	124	.47	2.66
Scott Creek	13,150	41	.23	.52	32,960	103	.59	2.50	42,600	133	.76	1.29
Total	40,710	64	.29	1.13	47,860	75	.34	1.17	82,200	127	.58	1.70
FORT KLAMATH												
Dry Camp	31,730	99	.42	1.31	38,770	121	.52	1.24	91,800	287	1.24	2.37
Cherry Creek	20,740	65	.43	1.98	37,120	116	.78	1.79	84,700	264	1.79	2.28
Total	52,470	82	.43	1.51	75,890	118	.62	1.45	176,500	278	1.45	2.33
KENO												
Johnson Prairie	58,555	93	.64	.89	74,090	117	.82	1.47	169,000	268	1.89	2.28
Jenny Creek	11,080	18	.27	.42	29,840	48	.73	2.69	51,400	83	1.27	1.72
Total	69,635	56	.57	.83	103,930	83	.79	1.68	220,400	176	1.69	2.12
TOTAL	162,815	64	.41	1.05	227,680	90	.55	1.40	479,100	189	1.17	2.11

Table No. 5

Estimated Ponderosa Pine Losses for 1939

Western Klamath Subregion

Area and Unit	Ponderosa Pine Acreage	Pine Volume January 1939 MBM	Estimated 1939 Loss				
			Trees	Volume MBM	Trees per Section	Board Feet per Acre	Percent of Stand
KENO AREA							
Jenny Creek	40,000	272,000	2,000	1,150	32	29	.42
Johnson Prairie	44,000	278,400	1,750	2,040	25	46	.73
Pokegama	58,000	244,000	1,700	800	19	14	.33
Buck Lake	18,000	100,000	400	310	14	17	.31
Clover Station	36,000	39,000	2,100	280	37	8	.72
Chase Butte	50,000	44,000	1,700	330	22	7	.75
Round Lake	18,000	30,000	950	210	34	12	.70
Aspen Lake	46,000	190,000	1,900	680	26	15	.36
Total	310,000	1,197,400	12,500	5,800	26	19	.48
BEAVER MARSH AREA							
Timber Crater	25,000	175,000	400	405	10	16	.23
Scott Creek	15,000	243,000	900	1,044	38	70	.43
Kirk	2,000	12,600	50	42	16	21	.33
Total	42,000	430,600	1,350	1,491	21	35	.35
FORT KLAMATH AREA							
Yawkey	19,000	177,000	700	972	24	51	.55
Seven Mile	13,000	202,000	600	804	30	62	.40
Crystal	18,000	359,000	1,400	1,630	50	90	.45
Odessa	21,000	206,000	800	440	24	21	.21
Total	71,000	944,000	3,500	3,846	32	54	.41
TOTAL	423,000	2,572,000	17,350	11,137	26	26	.43


BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
FOREST INSECT INVESTIGATIONS
WESTERN PINE BEETLE SURVEY
ROGUE RIVER SUBREGION, OREGON
AND WEST KLAMATH SUBREGION, OREGON
AREA BOUNDARY
UNIT BOUNDARY
CHECK PLOT
1939 INFESTATION
NORMAL INFESTATION 0-25 TREES PER SECTION
NORMAL INFESTATION 25-50 TREES PER SECTION
LIGHT EPIDEMIC INFESTATION 50-100 TREES PER SECTION
MODERATE EPIDEMIC INFESTATION 100-200 TREES PER SECTION
HEAVY EPIDEMIC INFESTATION 200-400 TREES PER SECTION
CUT-OVER AREAS AS OF JAN. 1, 1939
SCALE 1 INCH = 12 MILES
NATIONAL FOREST
UMPQUA
ROGUE RIVER
SISKIYOU
PROSPECT DIVISION
SISKIYOU DIVISION
CRATER LAKE NAT'L
CRATER LAKE
CRATER LAKE UNIT
KIRK UNIT
SEVEN MILE UNIT
AGENCY UNIT
CRYSTAL UNIT
FT. KLAMATH AREA
ODESSA
ASPI
JOHNSON PRAIRIE UNIT
JACKSONVILLE
MEDFORD
CENTRAL POINT
CALIFORNIA